Frieder Seible, Ph.D., PE, Prof. emeritus

PO Box 844 • Del Mar, CA 92014-0844 • Phone (858) 229-4529

Tony Anziano
Toll Bridge Program Manager
Caltrans
325 Burma Rd.
Oakland, CA 94607

July 26, 2013

Ref: Seismic Safety and Opening of the New San Francisco Oakland Bay Bridge

Dear Mr. Anziano:

I am writing to you to restate my opinion that the opening of the New San Francisco Oakland Bay Bridge East Bay Spans should not be delayed once seismic safety has been achieved. This has been and is the opinion of the Caltrans SAB and the Toll Bridge SSPRP from the very beginning and is also my personal conviction restated here. We have already experienced significant delays for this important seismic safety project due to political posturing and inquiries, prompted by technical misinformation. To date we are fortunate that we did not have a repetition of a Loma Prieta type event or an even bigger earthquake in the Bay Area, an event that is almost certain to occur, we just don't know when.

The existing East Bay Spans of the Bay Bridge, while upgraded and retrofitted following Loma Prieta, still do not provide the desired and even mandated level of life safety for even ordinary bridges (exactly the reason why we are building the new bridge) and should be decommissioned ASAP, namely as soon as traffic can be moved to the new bridge safely, both in terms of traffic operations and earthquakes. The new bridge, even with two of the shear keys on bent E-2 not yet functioning, has already achieved a level of seismic safety that exceeds that of the old bridge by at least a factor of two. Actually, based on all analyses provided to date, the new bridge (with shims installed as discussed below) has met the design intent - namely to withstand the 1,500 year event with minimal damage that will allow traffic operations after inspection and minor repairs as desired for a life line bridge.

In most other bridges the seismic loads are carried by the bearings and the shear keys are the secondary system that will catch the bridge once the bearings have failed. The New Bay Bridge is different. For the New Bay Bridge the shear key system on E-2 was conceived and designed to carry the entire lateral load. To achieve this, the rocker bearings have a gap on both sides so the transverse loads are not transmitted through the bearings. This gap also allows for improved rotation, easier inspection, and reduced maintenance of the bearings over the 150 year design life of the bridge.

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Currently, shear keys S1 and S2 are not complete and cannot carry lateral loads. However, in case of an earthquake the lateral load can be carried by the center shear keys S3 and S4 on the cross beam of bent E-2 as long as the gaps in the bearings are closed and the bearings engage simultaneously with shear keys S3 and S4.

The closing of the gaps is accomplished through the installation of shims or teflon coated machined steel plates that still allow bearing rotation but no lateral movement in the bearings. The only drawback is that inspection and maintenance of the bearings is somewhat more difficult during the short time the shims are in place. I understand that the shims are being manufactured, will be delivered by August 1st, and will be installed immediately.

With the design level of seismic safety achieved with shims in place, there is no reason or justification to delay the opening of the new bridge. This way we can provide seismic safety for the general public at the earliest possible time. As long as we are ready with all other traffic and seismic related safety and functionality issues, there is no need to wait until December (or whenever the outer shear keys on E-2 are completed) to open the bridge. The New San Francisco Oakland Bay Bridge East Bay Spans should be opened for traffic as originally planned.

Sincerely Yours

Frieder Seible, Ph.D., PE